

REMARKS

By the amendments made above, claims 9 and 16 are revised and new claim 18 is added to place this condition for allowance. Currently, claims 1-18 are before the Examiner for consideration on their merits.

First, claims 9 and 16 have been revised to be in independent form based on the Examiner's indication of allowable subject matter. Claim 8 is also replicated as new claim 18 but made dependent on allowable claim 16. By these revisions, claims 9, 16, and 18 are in condition for allowance.

Second, Applicants traverse the rejection primarily based on United States Published Patent Application No. 2003/0056572 to Werner. Werner is the work of the inventor of the instant application and this reference teaches a method of detecting leaks in a plate pack heat exchanger having first and second flow paths and primary and secondary chambers. In Werner, helium is passed through the second flow path associated with the primary chamber. In the secondary chamber, compressed air is passed through the first flow path, with the first flow path including a helium detector at an outlet thereof. The flow of helium in the second flow path is throttled down so as to raise the internal pressure in the primary chamber. Any leaks between the primary and secondary chambers are detected by helium passing into the first flow path.

Claim 1 is similar to the method employed in Werner except for the requirement of "passing the detection fluid in different directions in said one flow path." The Examiner admits that this feature of claim 1 is not found in Werner.

Thus, the issue of obviousness can be framed as whether it is obvious to pass the detection fluid of Werner in different directions in the secondary flow path.

The Examiner concludes that this modification of Werner is obvious, providing the reasoning of "because it would provide a greater chance of detecting very small leaks".

Turning back to the invention for a moment, it is important to note that the object of the invention is not to detect very small leaks. Instead, the main object of the invention is to detect all the leaks that exist. The problem with the Werner system is

that leaks could be missed by passing the detection fluid in one direction as taught. The reason for this is that the helium may not come into contact with every available internal surface of the heat exchanger, whether the exchanger is a plate type, tube type, because of the presence of air locks. Passing the detection fluid in two different directions can disrupt such air locks so that a surface that doesn't see the detection fluid when it is traveling in a first direction is able to see the fluid when the direction of flow is reversed. Thus, a leak that is shielded from the detection fluid as a result of an air lock is no longer shielded and the leak can be detected.

Furthermore, it is invariably the case that heat exchangers have liquid trapped in them. This is the case even if the heat exchanger is supposed to be drained, which is not likely in practice. Passing the detection fluid in both directions in the flow path of the heat exchanger ensures that the detection fluid bubbles through the water and, again, reaches essentially every internal surface region of the heat exchanger.

In practice, it is found that there is rarely a drawing available of a heat exchanger subject to a leakage test and, in consequence, the internal arrangement or geometry of the plates or tubes of the heat exchanger is not known. Passing the detection fluid in both directions results in a dramatic improvement in the detection of leaks, since, irrespective of the internal arrangement or geometry of the heat exchanger, the incidence of the detection fluid on the internal surface is optimized.

Turning back to the rejection, the principal argument against the Examiner's stance is that the rejection lacks the required reasoning to support the conclusion of obviousness. Notably, there is no basis in the reasoning, e.g., reference to Werner or any other leak detection system that teaches the concept of passing a leak detection fluid in two different directions in a given flow path is known, to support the conclusion of obvious.

Applicant challenges the reasoning that the ability to detect very small leaks motivates the artisan to modify Werner as alleged in the rejection. Werner, in paragraph [0006] teaches that using the open ended flow path for the detection probe is faster and more accurate than the prior art method because the helium detected is quantitatively representative of the scale of the leak. From this, one of skill in the art

would be taught that Werner is capable of detection of small leaks already. The Examiner is merely speculating on the reason for alleging that using the two way flow of the detection fluid is obvious. The Supreme Court has acknowledged the importance of identifying "a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way the claimed new invention does" in an obviousness determination. *KSR International Co. v. Teleflex Inc.*, 127 S. Ct. 1727, 1731 (2007).

In this instance, the Examiner does not have a reason to draw the conclusion of obviousness. While the Court has also cautioned against granting a patent based on a combination of elements, this instant situation is not situation of applying a known technique to a known device to yield predictable results. The Examiner has not cited any objective evidence to support the contention that passing a leak detection fluid in two directions during a leak testing of a heat exchanger is even known, let alone known for the purpose of optimizing leak detection in heat exchangers.

This is not the case of the routineer exploring known options since there is nothing "known" about the inventor's advancement in the field of leak detection as expressed in the instant application. The inventor is the first to realize that significant improvements in leak detection for heat exchangers can be obtained when practicing the method of claim 1.

In fact, there is no legitimate basis or objective evidence of record to support the conclusion that the method of claim 1 is obvious under 35 U.S.C. § 103(a). Therefore, a *prima facie* case of obviousness has not been established against claim 1 and the rejection must be withdrawn.

Since claim 1 has been demonstrated to be patentably distinct from Werner, its respective dependent claims are also patentable over the applied prior art. The secondary reference to Shanley does not supply the deficiencies in Werner. Thus, even if the teachings of this reference were incorporated into Werner, the method of claim 1 is still not taught.

In light of the arguments made above, claim 1 and its dependent claims are now in condition for allowance.

Accordingly, the Examiner is requested to examine this application and pass all pending claims onto issuance.

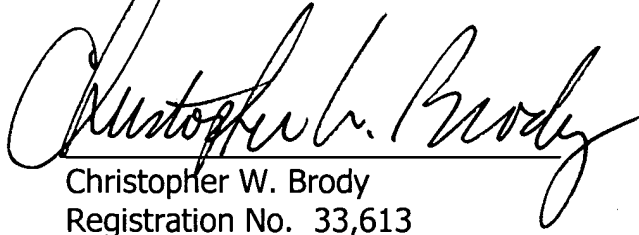
If the Examiner believes that an interview would be helpful in expediting the allowance of this application, the Examiner is requested to telephone the undersigned at 202-835-1753.

The above constitutes a complete response to all issues raised in the Office Action dated January 11, 2008.

Again, reconsideration and allowance of this application is respectfully requested.

Applicant respectfully submit that there is no fee required for this submission, however, please charge any fee deficiency or credit any overpayment to Deposit Account No. 50-1088.

Respectfully submitted,
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